

What is claimed is:

1. For use in a plasma reactor including a plasma reactor chamber, a workpiece support for holding a workpiece
5 inside said chamber during processing and an inductive antenna:

a window electrode proximal a wall of said chamber, said antenna and wall being positioned adjacently, said window electrode being operable as:

10 Sub A 27 (a) a capacitive electrode accepting RF power to capacitively couple plasma source power into the chamber, and

(b) a window electrode passing RF power therethrough from said antenna into said chamber to
15 inductively couple plasma source power into the chamber.

2. The article of Claim 1 wherein said window electrode comprises a semiconductor electrode.

20 3. The article of Claim 1 further comprising an RF plasma source power supply connected to said window electrode to produce a capacitively coupled plasma.

25 4. The article of Claim 3 wherein said RF plasma source power supply is connected across said workpiece support and said window electrode.

30 5. The article of Claim 1 further comprising an RF plasma source power supply connected to said antenna to produce an inductively coupled plasma.

6. The article of Claim 5, further comprising a bias

RF power supply coupled to said window electrode.

7. The article of Claim 6 wherein said bias RF power supply is connected across said support and said window
5 electrode.

8. The article of Claim 7 wherein said window electrode operates simultaneously as a window to the inductive antenna, and as a counter electrode to said
10 support.

9. The article of Claim 1 wherein said window electrode comprises a portion of said wall.

10. The article of Claim 9 wherein said inductive antenna overlies said window electrode and faces said support through said window electrode.

11. The article of Claim 1 wherein said window electrode comprises a sidewall portion of said reactor enclosure generally perpendicular to and surrounding a periphery of said support.

12. The article of Claim 11 wherein said inductive antenna is adjacent said sidewall portion.

~~13.~~ A plasma reactor comprising:
a plasma reactor chamber;
a workpiece support for holding a workpiece inside said
30 chamber during processing
a window electrode facing said support;
an inductive source power applicator external of said

chamber and facing said window electrode;

wherein said reactor further comprises one of:

(a) an RF plasma source power supply connected to said window electrode to capacitively couple RF plasma source power into said chamber,

(b) an RF plasma source power supply connected to said inductive source power applicator to inductively couple RF plasma source power through said window electrode into said chamber.

14. The reactor of Claim 13 wherein said reactor further comprises in combination with the RF power supply connected to the inductive power applicator an RF bias power source coupled to said window electrode.

15. The reactor of Claim 14 wherein said bias RF power source is connected across said support and said window electrode.

16. The reactor of Claim 15 wherein said window electrode operates simultaneously as a window to the inductive applicator, and as a counter electrode to said support.

17. The reactor of Claim 13 wherein said window electrode comprises a semiconductor electrode.

18. The reactor of Claim 17 wherein said semiconductor electrode comprises silicon.

~~19. A plasma reactor comprising:~~

~~a plasma reactor chamber and a workpiece support for~~

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holding a workpiece within the interior of said chamber during processing, and a window electrode facing the interior of said chamber;

an inductive plasma source power applicator overlying
5 said window electrode;

at least one RF plasma source power supply;
said reactor being operable in each one of two modes, said
modes comprising:

(a) a capacitively coupled plasma mode wherein
10 said RF plasma source power supply is coupled to said window electrode, and

(b) an inductively coupled plasma mode wherein
said RF plasma source power supply is coupled to said
inductive power applicator instead of said window
15 electrode.

~~20.~~ A plasma reactor comprising:

a plasma reactor chamber and a workpiece support for
holding a workpiece inside said chamber during processing,
20 said chamber having a reactor enclosure portion facing said support, said reactor enclosure portion including a window electrode;

an inductive plasma source power applicator overlying
said window electrode;

25 an RF plasma source power supply;
said window electrode being operable as:

(a) a capacitive electrode for coupling RF plasma
source power into said chamber, said RF plasma source
power supply being coupled to said window electrode,
30 and

(b) a window, said RF plasma source power supply
being coupled to said inductive power applicator, said

applicator inductively coupling RF plasma source power through said window electrode into said chamber.

21. The reactor of Claim 20 wherein said window
5 electrode comprises a semiconductor.

22. The reactor of Claim 21 wherein said window electrode comprises a ceiling portion of said reactor.

10 23. The reactor of Claim 21 wherein said window electrode comprises a portion of an enclosure of said chamber.

24. The reactor of Claim 20 wherein in said
15 capacitively coupled mode the one RF plasma source power supply is connected across said workpiece support and said semiconductor electrode.

25. The reactor of Claim 20 wherein in said
20 inductively coupled mode said reactor further comprises a bias RF power supply coupled to said window electrode.

26. The reactor of Claim 25 wherein said bias RF power supply is connected across said workpiece support and said
25 window electrode.

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